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ABSTRACT

Educational productivity offers a perspective but not a solution for many of the problems in American education. Because education produces several different products, several kinds of educational policy outcomes can be defined as productivity increases. These include improving classroom methods, curriculum structure, curriculum content, technology, organizational processes, and educational management. Other productivity increases include reallocation of resources to programs of greater social value, to educational levels where they will do the most good, or to pupils for whom the marginal productivity of resources is likely to be greater. Federal and state governments have tried to improve all these types of productivity. Yet the overall effect is difficult to gauge. In some cases, federal or state action may advance one dimension of productivity while diminishing another. Although the largest questions of school finance cannot be answered on productivity grounds alone, some dimensions of productivity ought to guide policy decisions. Federal and state governments ought to concentrate resources on developing productive programs. Efforts also should be made to increase productivity through improving the organizational processes and management of education. Finally, more attention should be given to more productive ways of educating adults and secondary school students. (Author/JM)

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OCCASIONAL PAPER #21

SOME THOUGHTS ON EDUCATIONAL PRODUCTIVITY AND EDUCATION POLICY

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INTRODUCTION

Concerns about productivity in education are regularly expressed at all levels of government, both by those who worry about the quality of education and those whose main concern is whether taxpayers are getting a reasonable return on their dollars.

Today, these anxieties are everywhere on the rise. Parents are concerned about the decline in achievement test scores, worrying that their children are learning less. Prospective employers find many young persons ill-equipped with either the skills or attitudes needed for adult careers. College educators complain that their entering students can't write or study. Those who levy and pay taxes note that real per-pupil expenditures for schooling have been rising for most of the past 20 years, and wonder why the benefits of this expanded public support are so hard to discern. Some of the concerns that are currently voiced about the functioning of the educational system itself are even more clearly related to productivity: Are new methods of teaching less effective than the old (e.g., the New Math)? Has there been a shift in emphasis away from "the basics" toward less valuable subjects and courses? Do new forms of school organization (e.g., open classrooms) contribute to learning? Is less instruction taking place, as teacher unions succeed in negotiating lower work loads

along with higher salaries? The search for improved performance has led educational policymakers in many directions--toward innovation and back to traditional methods, toward planning, management, and accountability systems and toward greater responsibility for the individual classroom teacher; toward new technology and teacher aids, early childhood and career education. But the main problem, or problems, of productivity remain unsolved.

Federal and state governments have responded to this concern about educational productivity frequently and imaginatively in the past decade. Both have expanded severalfold the resources devoted to vocational education, whose principal criterion of success is the economic productivity of its graduates. The economic objective of human capital development has also been a prominent reason for expanded support for higher education, and for the birth of career education. Moreover, through rhetoric and subsidy, the federal government has played a leading role in promoting national education reforms in the name of educational productivity: new science and math curricula, improved reading programs, many applications of new technology, more efficient planning and management, and so forth. State governments have joined in many of these initiatives. They have also, in the majority of states, installed ambitious educational accountability systems to keep track of outputs (i.e., performance on tests) and, in the most ambitious cases, to allocate state resources to some extent on the basis of local school performance on these tests.

The next section of this paper is an attempt to define educational productivity and describe the several distinct kinds of

educational policy outcomes which might be defined as increases in productivity. The succeeding section reviews the development and performance of typical federal and state programs which seek these various outcomes. A brief conclusion suggests some guidelines to future policy development, in terms of emerging productivity issues.

ALTERNATIVE DEFINITIONS OF EDUCATIONAL PRODUCTIVITY

The general economic definition of productivity is output per unit of input. This can be translated into language that seems meaningful in education as "educational results per unit of educational resources" or "educational benefits per educational dollar." But these very terms suggest the difficulty of applying the productivity concept to the products or processes of the public schools. There is, of course, no overall metric of educational output or benefit--no "unit of education" whose production costs at different times or in different places can be compared. Attempts to quantify productivity in education are subject to all the well-known difficulties of measuring educational outcomes, plus the even less tractable problems of applying a common metric to different kinds of outcomes and to outcomes for different kinds of pupils. Our use of the term "productivity" does not mean that we believe that methods of measurement can be transferred to education from other fields, such as manufacturing industry, where quantification is a relatively straightforward matter. Rather, we use "productivity" to suggest a more generalized relationship be-

tween what society puts into education and what it receives in return.

To do anything more specific with the productivity idea, we need to be a little more precise about what slices of the educational system and what educational processes we are considering. Productivity can be defined in the large or in the small. It can refer to the general cost-effectiveness of the whole school system or to the efficiency with which a particular set of skills is transmitted to a particular stratum of pupils at a particular grade level. Each of the following would, in some sense, constitute an increase in educational productivity:

1. An improvement in methods for teaching specific skills to specific pupils--e.g., a better method for teaching reading to disadvantaged pupils in the primary grades.

2. A change in the structure or content of what is taught, so that instructional resources are expended on more valuable (or more generalizable, or longer lasting) skills--e.g., modernization of the curriculum for high school courses in the natural or social sciences.

3. A change in the technology, organization, or management of instruction that permits higher quality for the same cost or a reduction in cost without reducing quality--e.g., introduction of a more effective technology (individually prescribed instruction) or a more effective resource mix (use of teacher aides).

4. Reallocation of resources to programs of greater social value, in terms of the economy or other aspects of national welfare--e.g., recent shifts toward an emphasis on employability and

career-related skills; the emphasis on science education in the 1950s.

5. A change in the distribution of resources over the various stages of a pupil's education, such that more resources are made available at times when their effects are greater--e.g., shifts of resources from secondary to primary grades, or from the "regular" program to preschool, or perhaps, to continuing or adult education.

6. Reallocations of resources in favor of pupils for whom the marginal productivity of resources is likely to be greater (exactly who these pupils are is not easy to determine, and may depend entirely on our choice of relevant outcomes, and selection of a time frame, as is explained below).

Note that while the first few of these pertain to the efficiency of educational production processes at the classroom, school, or program level, the others have nothing to do with input-output relationships in the same technical sense. Instead, they pertain to the mix of educational services that a school system offers (some of which are likely to be more productive than others) and to the distribution of resources among different types of pupils (some of whom are likely to display larger gains--however defined--than others in response to given doses of schooling). In other words, if we think of a school system as an enterprise with multiple products, the productivity of the enterprise as a whole can be enhanced either by learning how to produce the individual products better or by shifting resources from less valuable to more valuable products.

FEDERAL AND STATE PROGRAMS AFFECTING PRODUCTIVITY IN EDUCATION

Federal and state governments have explored every one of these dimensions of educational productivity. In many cases, resources have been slim and the effort scattered and sporadic; but in other cases, sizable amounts of funds have been invested throughout the educational system over many years. To foster productivity, the federal government has funded educational research; underwritten efforts to develop improved curricula and materials. Federal and state officials have sponsored innovation and demonstration projects; subsidized teacher training; supported programs in early childhood, vocational, and adult education; and encouraged the development of evaluation, accountability, and management systems. State governments have also sought, through their regulatory and certifying processes, to improve the quality of inputs (better trained teachers, newer textbooks and materials, etc.). And both levels of government may have affected the productivity of the educational system substantially by directing large amounts of new resources to the education of previously neglected groups--the disadvantaged, handicapped, and non-English-speaking. What follows is a very brief assessment of these varied substantive and procedural approaches to greater productivity, and of the progress that has been made toward that goal. In this review, three cross-cutting themes will emerge:

1. The productivity-related efforts of federal and state governments have been extensive indeed, but their overall

effect is difficult to gauge, both because the measurement of productivity in education is elusive and because sorting out the contribution of any one new development is often impossible.

2. Many programs have more than one productivity-related objective or effect; in some cases, federal or state action may help to advance one dimension of productivity while diminishing another.

3. Productivity is a rich but inadequate perspective for viewing the performance of education policies; increased productivity, even in the broadest sense, is not the sole purpose of federal or state involvement in education.

Obviously, a focus on productivity alone is not sufficient to guide educational policy. Such equally basic concerns as socialization and equal opportunity may dictate choices that would not be made on pure productivity grounds. Nevertheless, as the following discussions should make clear, the productivity perspective is an important one for understanding and interpreting existing federal and state activities, and also for assessing proposed changes in national education policies and programs.

Improving Educational Practice at the Classroom Level

Myriad efforts have been made to enhance productivity by generating improved teaching methods, materials, and technologies. Much of the public support for research has had this ultimate aim. Both basic and applied research in education (and especially educational psychology) have traditionally concentrated on this dimension of schooling. Such programs as ESEA Title III, Right to

Read, and vocational education exemplary programs have, similarly, encouraged the development of local projects to improve educational practice. Subsidized teacher training programs have had a similar purpose.

The effectiveness of these widespread efforts is difficult to assess. On the one hand, educational research is held in fairly low repute by many educators and policymakers; demonstration programs are commonly believed to have little second-order impact (i.e., those who "observe" do not then imitate); teacher training programs have been quietly shelved (especially at the federal level) or, in the case of teacher centers, turned over to the practitioners themselves; and much recent research on implementation and outside efforts to stimulate improved local practice indicates that the innovations sponsored by higher levels of government have often not been implemented at all or have been transformed beyond easy recognition by the local practitioners. And yet, on the other hand, the list of changes in educational practice that have been stimulated thereby is impressive. Consider a short list of the more prominent: behavioral modification approaches to learning, individually prescribed instruction, competency-based teacher education, computer-assisted instruction, educational TV satellites programming, training programs in science education, Sesame Street, talking typewriters, minicourses, inquiry-based teaching, and new educational toys and games. To whatever extent these and other prominent and numerous innovations of the past generation have improved educational productivity, the thanks should go largely to

governmental support for their originators and adopters.

Changing the Content of What is Taught

Moving beyond improvements in efficiency of classroom practice, federal and state government has had great influence on the question fo what is taught. Here the focus shifts to the social or economic relevance of schooling: do the students learn what is needed to pursue careers and to contribute to the achievement of nationally important social purposes? Government involvement in this aspect of educational productivity reflects the anxieties associated with different phases of our history: vocational education (dating from 1917) was introduced to foster the development of skilled industrial workers; mathematics, science and foreign language training was stressed to meet Cold War threats; drug abuse education responded to new problems presented in the '60s, and career education has been presented as a means to get students "back on a productive track" in the 1970s.

Such actions have affected the content of education at two levels: First, there have been changes in the allocation of resources among types of courses and programs; second, there have been changes in the content (curriculum) of various courses to reflect new knowledge and new social requirements. The effects of these efforts are widespread, both in terms of adoptions of curricula and shifts in emphasis among programs. Vocational education is growing nationwide; it is today even more popular at state and local levels (by the measure of dollars voluntarily

added by the recipients of federal aid) than it is among its original federal sponsors. Several of the new math and science curricula developed in the 1960s are extensively used in our elementary and secondary schools. With environmental, drug abuse and career education, the impact is less clear. A few successful projects have been launched in each area, but the extent and duration of the changes are in doubt. With career education, rhetoric has flowed more freely than dollars. Reflecting a growing confidence in the superior ability of jobs and income to improve the attitude, behavior, and alternate productivity of young persons, public dollars may flow more quickly and generously into youth employment programs. Thus, partly because resources have been scarce but partly because of more fundamental doubts about their relative effectiveness in dealing with broad problems in our society, the more recent federal ventures will have neither the enduring political support nor the fundamental educational impact of the earlier ventures into vocational, math, and science education.

Improving the Organization and Management of Education Systems

During the past decade, federal and state governments have supported almost every management improvement that has come (or been pushed) down the road toward educational policymakers. There have been experiements in education vouchers and in performance contracting, extensive state-level programs in educational planning and statewide "accountability," testing, and expanded

parent and community participation in the local implementation of federal and state programs. Moreover, a veritable subculture of educational evaluators has taken form to help pinpoint the effectiveness of educational programs. At the level of school-building and classroom organization, officials have also promoted the use of teacher aides, reading specialists, resource centers, individualized instructional planning, and concepts such as mainstreaming for handicapped students.

Although the American educational system abounds with these new procedures, this is an area in which it is particularly difficult to determine the effects. The major experiments have gone largely unnoticed by the local schools. Most states have legislated statewide testing programs, but seem (perhaps ought) to make little use of the results for subsequent program planning. New management processes, planners, community councils, aides and specialists exist; but we cannot yet show that educational productivity -- either in terms of short-term pupil performance or longer-term societal benefits -- has been, on balance, and on their account improved.

Changing the Distribution of Resources Over the Stages of Education

Here, federal efforts have been more prominent than the states. Through Head Start, Follow Through, the early primary emphasis of ESEA Title I compensatory programs, and the early childhood emphasis of some federal handicapped education programs, federal programs have helped create a national emphasis on these

grades, with the explicit productivity justification that progress at the early stages would improve educational performance in later grades, too.

This expectation has not been widely realized. Consistently, evaluations of these programs have shown early gains which tend to fade away in the program's later stages. Nevertheless, in some national testing programs, early primary scores have held up and even improved a little, while the scores for other grade levels have declined; and the most recent evaluations of selected early primary programs have shown modest educational gains, reflections perhaps of improved administrative efficiency in the federally-supported programs. It may be that the decade of federal investment in the early years is just beginning to pay off.

The Productivity Implications of Financial Programs

Although many education programs can readily be interpreted as attempts to enhance educational productivity, the bulk of the money raised for education is intended for quite different purposes: to provide adequate levels of basic school spending, to equalize spending capacity among jurisdictions with different wealth and need, and to distribute special resources for target groups of students with especially serious educational needs. Modest changes in the levels of spending or in the availability of resources among jurisdictions are unlikely to be judged on productivity grounds nor, of themselves, to produce any discernible

shifts in the average output of the affected schools. The large federal and state programs directed at target groups of students may, however, tell another story. Grants for compensatory education, for the education of the handicapped, and for bilingual education are redistributive amongst different classes of pupils. Their objectives are to channel extra educational resources to children with special educational needs -- children who would be expected to perform below the norm if only the standard school resources were made available to them. The question arises, do these attempts to equalize opportunity by compensating for educational disadvantage entail a sacrifice of productivity? Are the resources devoted to the disadvantaged and handicapped less productive than they would be if directed to "regular" children or, to sharpen the issue, if directed to the education of the gifted and talented? Is there an equity-efficiency tradeoff in education? This seemingly philosophical issue takes on considerable practical importance as larger and larger volumes of federal, state, and local money are channeled to the redistributive programs.

The possibilities of resolving this issue are clouded by the great uncertainty that now exists about the benefits derived from devoting more resources to the education of either regular or educationally disadvantaged pupils. Most statistical research on the effectiveness of schooling has failed to show that more resources -- e.g., greater teacher-pupil ratios, more materials, or better facilities -- make a significant contribution to pupil performance, at least over the ranges for which substantial experi-

ence is available. However, more recent studies using very detailed individual pupil data yield more positive results, still, however, without giving us any firm basis for estimating the returns to increased educational spending. The evidence on returns to additional spending on the educationally handicapped is especially meager. Thus, we are in a poor position to determine the relative effects of devoting extra resources to regular or talented pupils, on one hand, or the disadvantaged and handicapped, on the other.

Unfortunately, the question of the efficiency -- equity tradeoff hinges on precisely such information about the production of educational services. The central issue, in the language of the economist, is whether the marginal productivity of resources is greater in educating regular pupils than it is in educating the disadvantaged and handicapped. If it is, then the current and projected redistributive programs involve a sacrifice -- a diminution in the rate of human capital formation in the United States, which may eventually translate into a lower rate of economic growth. Certainly, in the 1950s, when we devoted considerable resources to education of the talented in response to a perceived external challenge, we acted as if it were true that the marginal productivity of educational resources was highest for those groups. During the last decade or so, the pendulum has swung the other way -- not, however, because of a change in views about productivity, but because of the emergence of other concerns -- equal opportunity, civil rights, and elimination of poverty -- that have grown to dominate concerns about aggregate economic growth.

The notion of an equity-efficiency tradeoff does not go unchallenged, however. A proposition diametrically opposed to the tradeoff hypothesis is that the achievement gap displayed by many disadvantaged children may represent a high-value target for additional education resources. The reasoning behind this view is that the gap indicates unrealized potential, which could be realized if appropriate resources were appropriately applied. Unfortunately, the evaluation literature on special programs for the disadvantaged tends to dampen this optimistic view. It has not yet been convincingly demonstrated that incremental resources can elicit the same returns as resources devoted to regular programs, much less the higher returns implicit in the "untapped potential" theory. Nevertheless, our information on what works for the disadvantaged is too inconsistent and too incomplete to rule out the hypothesis at this stage.

One's view of the efficiency-equity tradeoff may also depend on the time horizon that one is willing to consider. Even if it were true in the short-run that programs for the disadvantaged entail a loss of aggregate output, this need not be true in the longer run. A policy of investment now to overcome environmentally caused educational deficits may yield its dividends in the next generation. These may take the form of reduced disadvantage in the future (because the next generation of parents will offer better environments to its children) and concomitant reduced need for redistributive educational programs and outlays. In addition, the redistributive programs may reduce future rates of dependency, and the associated demands for welfare and related

public services. In sum, what appears to be a sacrifice of productivity now could prove to be a productive investment if long-run educational and noneducational benefits are counted. In the absence of relevant empirical evidence, however, this must be treated as a speculative possibility, rather than a well-founded research proposition.

POLICY IMPLICATIONS

This brief consideration of productivity in its relation to education programs may have opened up Pandora's Box. It seems both constructive and necessary to extend the definition of educational productivity beyond the too-narrow efficiency terms borrowed from industrial organizations. But in this extension, the concept suddenly looms too large. One can implicate much if not most of education policy in the pursuit of productivity; and one can entertain the potentially troublesome hypothesis that the pursuit of other important educational objectives (like equal educational opportunity) might reduce aggregate productivity in the educational system. But I have also tried to indicate that the actual educational effects of these attempts to improve productivity has in no case been fully specified by research and evaluation, and that the pursuit of objectives other than productivity is both inevitable and, according to our values, necessary. What is offered is only a heuristic: the improvement of educational productivity will continue to generate fundamental political and policy issues at

every level of education policymaking. In what areas of policy-making are our concepts of productivity likely to be useful? In what areas are the questions really ones of inquiry with only a distant policy relevance?

At the outset, it seems clear that the largest questions of school finance cannot be answered on productivity grounds. Investments in financial equalization or in equal educational opportunity for specific target groups of students will have uncertain results in terms of aggregate educational outcomes, as well as of their distribution among students. These equity-based investments may entail a tradeoff with investments in the general population, or they may produce a complementarity - some groups better off and no one worse off. This is an important issue for continuing research but not one that is likely to inform policy very soon. Similarly, research on the productivity of education seems to say little about the average level of resources which ought to be invested. Thus, policy debates in educational finance will continue to rely upon questions of value, constitutional rights, and politics. Crude considerations of the education production function, such as class size, teachers' qualifications, and the availability of special services may enter into the debate to provide guidelines for resource allocation but they are unlikely themselves to determine the level of resources available to each child.

The other species of productivity which we have developed may be of somewhat greater direct assistance to policymakers:

Improving Efficiency
in the Classroom

The time is ripe for federal and state governments to concentrate resources upon the activities of program development. For a generation, educational research has been demonstrating the effectiveness of bits and pieces of educational practice -- various teaching practices, curricula, and organizational behaviors. But in most areas (special education being an especially pressing case), we are missing the essential building block of the "program" -- the configuration of resources (teachers, curricula, support services and materials in an appropriate local organizational structure) that is, at once, the educator's tools for instruction and the financier's means for allocating dollars efficiently and, ultimately, the unit of analysis for successful cost-effectiveness (productivity) analyses. Often, the elements of such "programs" already exist. What is lacking is not so much knowledge as an effort to apply what we know in the creation of classroom or school-level programs and instruction, to make sure that they work in real classrooms or schools, and then to encourage their adoption. A decade ago, such a strategy might have come under the rubric of "social experimentation," but today we are coming to understand that a more far flung and less structured program of field development must accompany selected careful experimentation, in order to provide improved ideas for experimental development, as well as the seedbeds for the ultimate adoption or well-tested new ideas. The outcome should be an array of definable, consistently productive, and

financially supportable programs of service.

Changing the Content or Structure of What is Taught

Changes in the content of schooling are likely to remain highly political events, as the disparate modern episodes of new science and math curricula, sex stereotyping in textbooks, and "back to basics" vividly demonstrate. Nevertheless, in deciding the structure of presenting what is to be taught, a productivity perspective may help policymakers. One might start with the common sense observation that more school time spent on one subject means, other things equal, less time spent on something else. One might add to that the fear that, rightly or wrongly, collective bargaining and other personnel management practices in education are leading to fewer hours of instruction per child per week. Some recent educational research seems to impart significant productivity implications to these two phenomena, for it shows that, mirabile dictu, the time spent by a student in learning a particular subject of skill is related to the amount learned. This finding, if it were carefully corroborated and absorbed into policy, could lead to such measures as fewer but stricter competency requirements, or more minimum hours of schooling per course, or stricter requirements for the planning and management of instructional time in the classroom. One has only to cite such prospects, however, to realize that here, too, questions of value and politics will inevitably reenter the policy debate.

Improving the Organizational
and Management of Education

One of the principal outcomes of the past decade's concentration on productivity in education has been to open up the "black box" -- to reveal the organizational processes which stand between the addition of input and greater output. Educational institutions seem, many by some analyses, to actually stifle moves toward greater productivity; while to others the picture is one of an overburdened institution which must run fast simply to preserve the status quo. Hopes for a breakthrough on the productivity front will probably concentrate more in this area than in any other. Recent flirtations with vouchers, performance contracting, decentralization, and accountability all reflect the view that productivity may be most effectively enhanced by reorganizing the incentive structures and decision-making processes of the educational system. In fact, none of the above departures have altered the behavior at the school building or classroom level very much; nor or they likely to. Policy measures to improve organizational performance must rely upon a more fine-grained analysis of the institutions, one which takes account of their ability to resist, redirect, and respond to changing policy requirements. Moreover, in the immediate future, such measures must also combat the deterious organizational side effects of declining school enrollments. A simple-minded productivity issue repeatedly emerges. Declining enrollments will pose a profound organizational problem for schools: a teaching force with less mobility and more seniority; an administrative

staff with diminished promotion opportunities; and concern for personal security and concomitant inability to stick out one's neck. The irony is that declining enrollments could be a great productivity opportunity. For the first time, every available new resource will not necessarily be expended on a never-ending expansion of school plant and staff. And yet, the education professions may be neither politically nor bureaucractically ready to capitalize on the opportunity, to garner the marginal resources and to apply them toward creative program improvements.

One proposal for improved organization and management may offer some opportunity for escaping the dismal scenario of professional retrenchment combined with onerous but ineffective centralized control mechanisms. It is the move toward school building-level program planning, accompanied by new modes of educational staff development. The growing awareness that the key to educational productivity lies in performance variables under the control of school building has led many policy analysts to suggest that the school building be given the opportunity and resources to revivify itself. The notion is that the principal and teaching staff, with community input, can develop an educational program particularly suited to their skills and the community's needs. School districts or states would set minimum performance requirements, provide technical assistance, and secure resources (taxes and transfers) for the program. Staff development would be a particularly vital element in such a strategy. The building's educational staff would, in effect, be acknowledging a broader responsibility to meeting the community's needs, and for that they

would require both knowledge and skills that traditional teacher education will not provide. Recent experience in California's Early Childhood Education (ECE) programs suggests that some headway can be made with school site management, but a productivity breakthrough, it ain't! What lies ahead is probably a lot of trial-and-error, with the unifying objective of forestalling institutional paralysis.

Distributing Resources Over the Stages of Education

This productivity prospective spotlights two important target groups of learners for new attention by policymakers:

Adult Learners. The numbers of adults seeking education from the public schools has grown markedly in the past decade and will continue to expand moderately. This demand is fueled both by the sheer numbers of adults (the baby boom is now 20-30 years old) and by emerging career patterns, where (simultaneously) promotions may depend upon extensive credentials and job transfers may require new skills. One productivity concern is glaring: the methods we employ to educate adults were not invented to educate adults. The public schools have sought to educate children and youth; colleges imagine that their typical student is 18 to 21 years old and fresh out of high school; most pedogogies have been derived from these assumptions. Little is known about more effective ways to educate older persons. Creative applied research in the education of adults could produce substantial productivity gains in this sector of education, and

in the economy.

Secondary School Students. Our high schools offer several "productivity puzzles." For many years, the dollars per pupil expended there have exceeded the average outlay in elementary and secondary education by as much as 50 percent, for reasons that have been long unexamined. The large size of these schools, which was intended to produce more effective education at lower unit cost, has evidently done neither, and the high school shows up increasingly in research as an institution almost perfectly resistent to external reforms. At the same time, most distressingly, it is in the high schools that student behavior problems are most evident and where the phenomenon of declining achievement test scores is most dramatic. High schools seem, by this casual analysis, to be progressingly less productive. Policy attention is turning increasingly from the early grades and from the colleges and universities toward the secondary school years. Up-to-date conclusive research on the characteristics and performance of the high school is lamentably absent.

CONCLUSION

All in all, then, educational productivity offers us a perspective but not a solution for many of the problems in American education. Using this perspective, we can anticipate some emerging policy issues and to suggest some areas where research can (and cannot) help to answer our original question: How can

each dollar invested in education and schooling bring a greater return in the effective performance of our citizens?